

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method comprising the acts of:

supplying an atomic layer deposition process gas to a process chamber, wherein a gas flow conductance is defined for gas exiting the chamber; and

varying a flux of the deposition process gas to a substrate in the process chamber by varying the gas flow conductance;

wherein varying the gas flow conductance comprises ~~varying~~ moving a restriction device within the chamber or forming part of the chamber to vary a restriction through which gas exits the chamber.

2. (Previously amended) The method of Claim 1 further comprising the act of maintaining a substantially constant flow rate of the gas into the chamber while varying the conductance.

3. (Previously amended) The method of Claim 1 wherein varying the conductance varies a flux of ions to the substrate.

4. (Previously amended) The method of Claim 1 wherein varying the conductance varies a flux of reactive atoms to the substrate.

5. (Previously amended) The method of Claim 1 wherein the flux of the gas on the substrate varies inversely with the conductance.

6. (Previously amended) The method of Claim 1 wherein a pressure in the process chamber varies inversely with the chamber conductance.

7. (Previously amended) The method of Claim 1 wherein varying the conductance comprises

alternating the conductance between a first conductance and a second conductance, the second conductance being higher than the first conductance.

8. (Previously amended) The method of Claim 7 wherein the alternating between the first and second conductances is periodic.

9. (Previously amended) The method of Claim 7 further comprising the act of generating ions during first conductance periods.

10. (Previously amended) The method of Claim 7 further comprising the act of generating reactive atoms during first conductance periods.

11. (Previously amended) The method of Claim 7 further comprising the act of generating a plasma during first conductance periods.

12. (Previously amended) The method of Claim 11 wherein generating the plasma comprises applying RF power within the process chamber during first conductance periods.

13. (Previously amended) The method of Claim 11 wherein generating the plasma comprises applying constant RF power within the process chamber, and further comprising the acts of:

igniting the plasma by increasing chamber pressure by lowering the conductance; and
extinguishing the plasma by decreasing chamber pressure by increasing the
conductance.

14. (Original) The method of Claim 1 wherein said varying a flux is part of a deposition sequence, the deposition sequence comprising separating each of a plurality of low conductance periods from one another by one of a plurality of high conductance periods.

15. (Previously amended) The method of Claim 1 wherein the deposition process gas is a first deposition process gas, and further comprising the acts of:

using the first deposition process gas to form a monolayer on a surface of the
substrate;

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removing the first deposition process gas from the chamber;

introducing a second atomic layer deposition process gas to the process chamber;

generating ions from the second deposition process gas by igniting a plasma;

using the ions to promote a reaction between the second deposition process gas and the monolayer; and

removing the second deposition process gas;

wherein varying the conductance comprises increasing the conductance during the removing of the first deposition process gas, decreasing the conductance during the introduction of the second deposition process gas, and increasing the conductance during the removing of the second deposition process gas.

16. (Previously amended) The method of Claim 1 wherein the deposition process gas is a first deposition process gas, and further comprising the acts of:

using the first deposition process gas to form a monolayer on a surface of the substrate;

removing the first deposition process gas from the chamber;

introducing a second atomic layer deposition process gas to the process chamber;

generating reactive atoms from the second deposition process gas by igniting a plasma;

reacting the reactive atoms with the monolayer to form a thin film; and

removing the second deposition process gas;

wherein varying the conductance comprises increasing the conductance during the removing of the deposition process gas, decreasing the conductance during the introduction of the second deposition process gas, and increasing the conductance during the removing of the second deposition process gas.

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17. (Previously amended) The method of Claim 1 further comprising the act of introducing purge gas pulses to the process chamber.

18. (Previously amended) The method of Claim 17 wherein varying the conductance comprises varying the conductance between a first conductance and a second conductance, the second conductance being higher than the first conductance, wherein second conductance periods occur at the beginning and end of each purge gas pulse and a period of first conductance occurs between the second conductance periods.

19. (Currently amended) A method comprising the acts of:

establishing a first flux of a first atomic layer deposition process gas over a substrate positioned in a process chamber by setting a first conductance of gas exiting the chamber as the first process gas deposits a monolayer over a surface the substrate;

establishing a second flux of the first process gas over the substrate by setting a second conductance of the gas exiting chamber, higher than the first conductance, as the first process gas is removed from the chamber;

establishing a first flux of a second atomic layer deposition process gas over the substrate by setting a third conductance of the gas exiting chamber as the second process gas reacts with the deposited monolayer; and

establishing a second flux of the second process gas over the substrate by setting a fourth conductance of the gas exiting chamber, higher than the third conductance, as the second process gas is removed from the chamber,

wherein setting the first conductance, second conductance, third conductance, and fourth conductance comprises controlling a gas flow restriction device within the chamber or forming a portion of the chamber.

20. (Currently amended) A method comprising the acts of:

supplying an atomic layer deposition process gas to a process chamber, wherein a gas flow conductance is defined for gas exiting the chamber; and

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varying a flux of the deposition process gas to a substrate in the process chamber by
varying the gas flow conductance;

wherein varying the gas flow conductance comprises moving a shield defining a
periphery of the chamber.

21. (New) The method of Claim 1 wherein moving the restriction device comprises moving a
wall portion of the chamber to increase or decrease a gas exit opening in the chamber.

22. (New) The method of Claim 19 wherein controlling the gas flow restriction device
comprises moving a portion of the chamber to increase or decrease a gas exit opening in the
chamber.

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